



H₂O_XSignals

sMDB Water Availability
November 2023

Xpansiv

H₂O_X
AN XPANSIV MARKET

H2OX Pty Ltd

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Executive Summary

This report provides an update to our previous Water Availability report released in June, prior to the current water season.

The first part of the season saw dry conditions across the sMDB. Despite water availability being high, allocation prices quickly climbed driven by a lack of willing sellers who were banking on hotter and drier conditions through summer.

Winter rainfall has been average across the irrigation regions driven by a few significant rainfall events in October and November. These events saw additional volume offered into the allocation market as sellers reassessed their strategies resulting in prices subsiding.

Climate

Winter-Spring

Winter and Spring rainfall (Figure 1) has been average across the inland regions of the sMDB while the ranges recorded below average rainfall despite the wet November (Figure 2).

Figure 1 Winter-Spring rainfall deciles

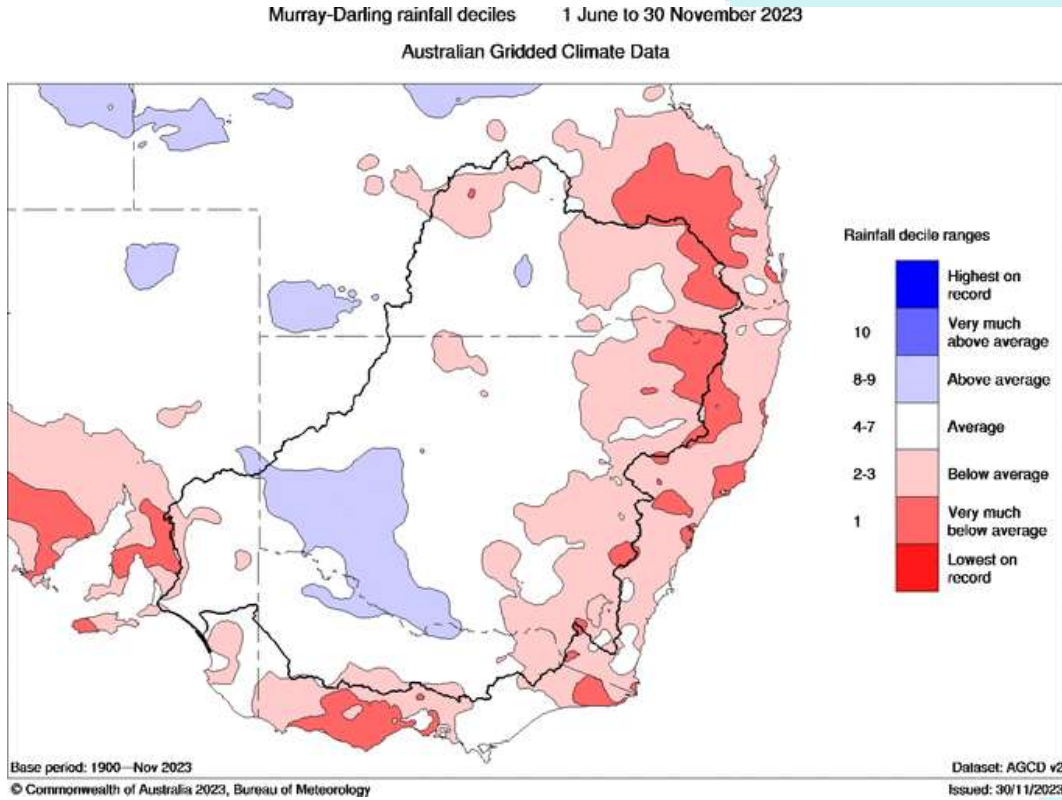
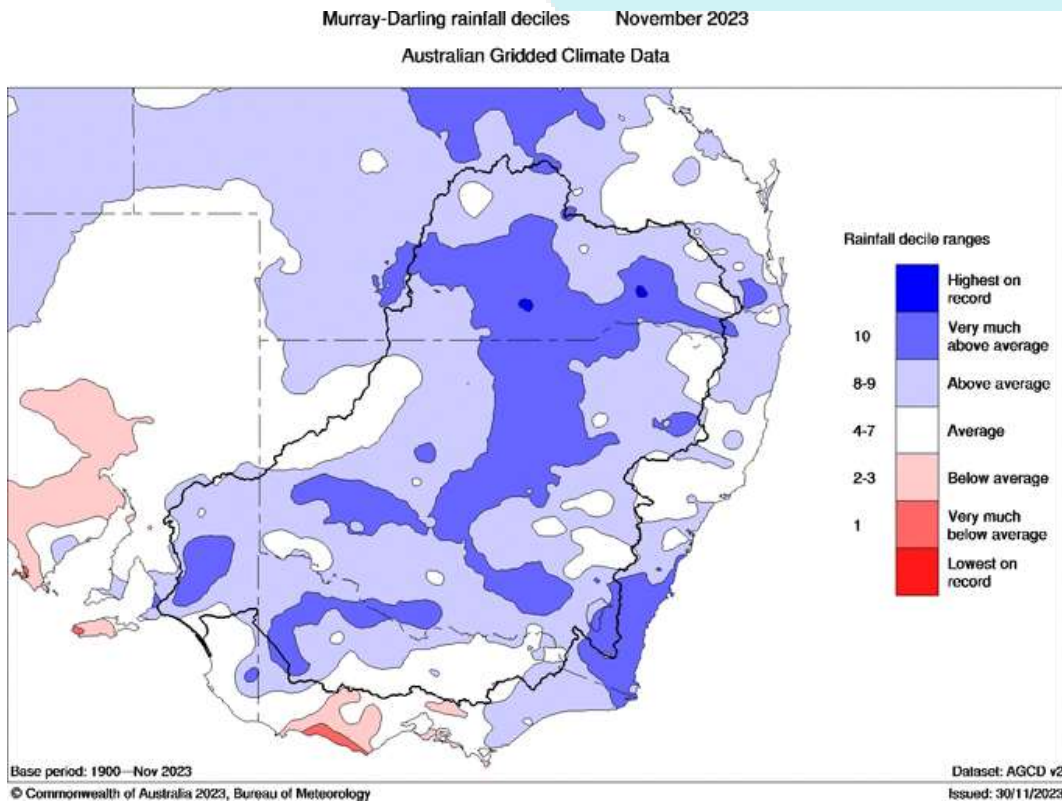


Figure 2 November 2023 rainfall deciles



Summer

The [Climate Driver Update](#) from 21 November states El Niño continues in the Pacific Ocean and positive IOD values persist in the Indian Ocean which should result in hotter, drier conditions across south-east Australia.

The [Climate Outlook](#) update released 16 November is suggesting the chance of exceeding median rainfall being a 50% (Figure 3) while forecast maximum temperatures are expected to exceed medians (Figure 4).

Despite the average rainfall over the winter period, [root zone soil moisture levels](#) are below and very much below average for the irrigated regions of the sMDB. This would indicate water usage may be slightly higher than average through Summer especially when combined with the outlook for hotter temperatures.

Figure 3 Chance of exceeding median rainfall (BOM)

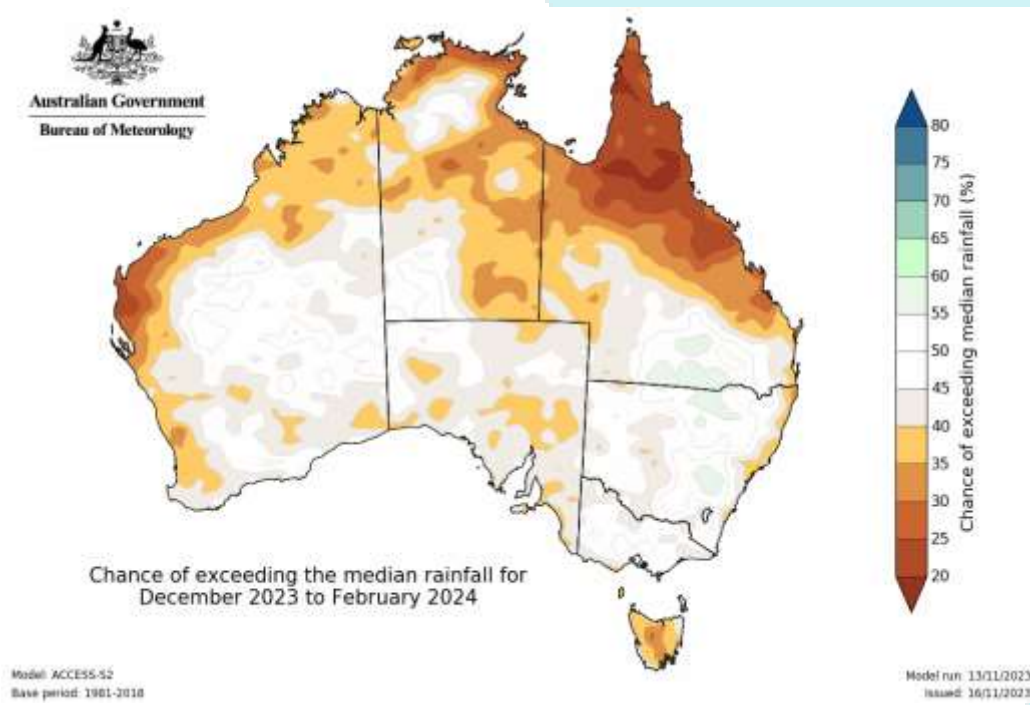
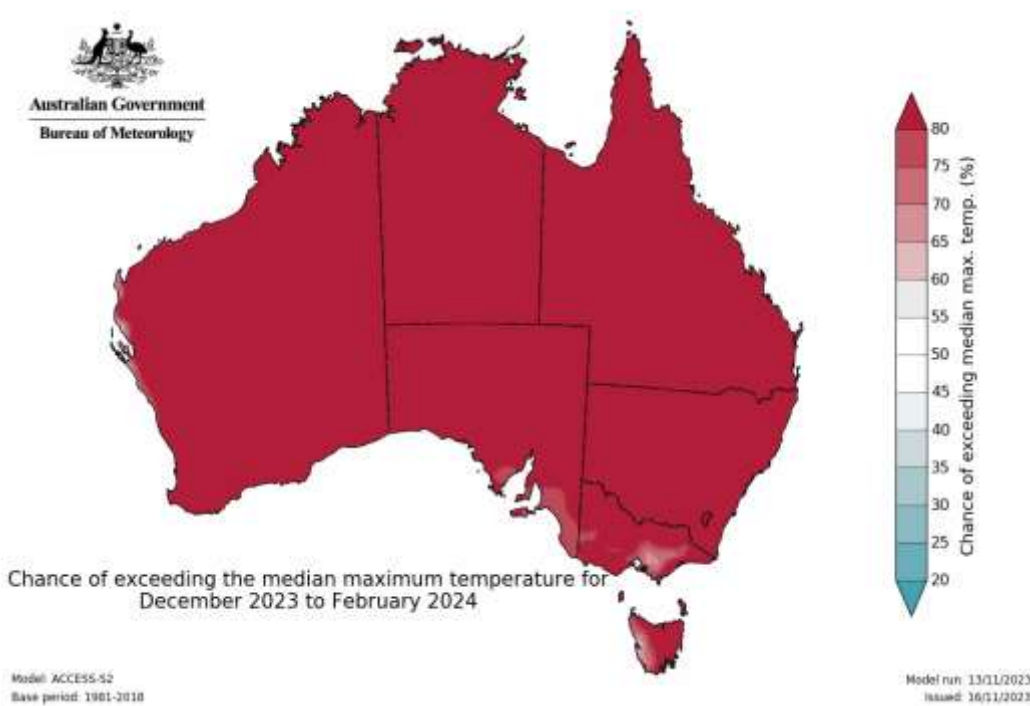


Figure 4 Chance of exceeding median maximum temperatures (BOM)

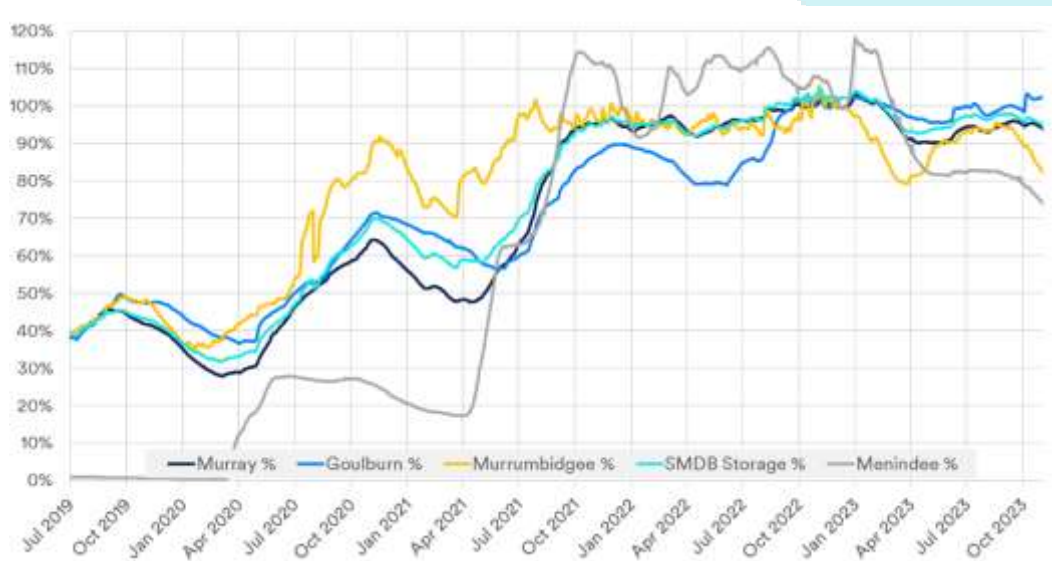


Water Storages

Major water storages have remained above 80% since the 2021-2022 irrigation season. At the combined sMDB level, they haven't dropped below 90%.

All entitlement classes were fully allocated last season and the current state of the storages means we are likely to see full determinations against all but Murrumbidgee General Security entitlements during 2023-2024. With Victorian Low Reliability now being allocated, there is sufficient water in storage to support 100% determinations for Victorian High Reliability entitlements in 2024-2025 under average inflow conditions.

Figure 5 Water storages



Water Availability

Carryover

Just over 1,800GL of allocation was carried into the 2023-24 irrigation season. In most cases, the choice to carry wasn't so much a choice as a necessity as allocation prices diminished to sub \$10/ML at the end of last season. Those with excess allocation and carry space took the opportunity to bank water into the projected El Niño season for negligible financial risk.

As of mid-November, there is roughly 237GL of allocation in Victoria spillable water accounts. A significant portion of this is likely to be relinquished given the rainfall events at the end of November.

Determinations

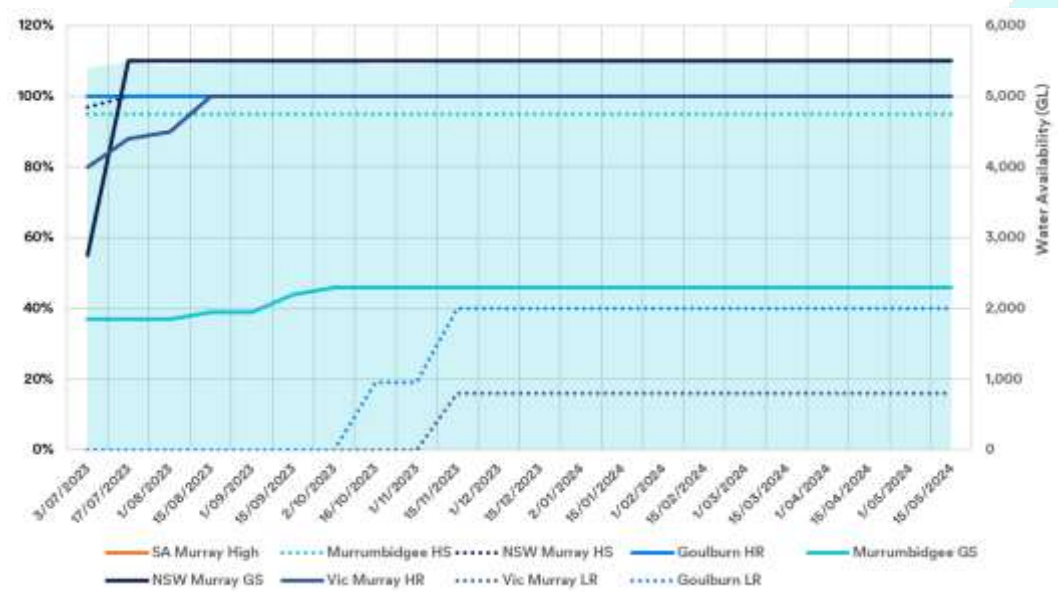
With storages full coming into this season, opening determinations were strong for most entitlement classes.

Murrumbidgee General Security has been the exception, increasing a modest 9% from its 37% opening in July. The ongoing in-paddock rainfall across the Murrumbidgee is resulting in decreased demand, maintaining high storage levels, leaving no space for additional resource to be accumulated.

The ongoing rainfall saw spill events from water carried in spill accounts resulting in Victorian Low Reliability being allocated at the beginning of October in the Goulburn (being only the second time it's been allocated since 2022-23) and mid-November in the Murray. Further determinations are expected against Low Reliability as the season progresses however this won't add to overall water availability.

The following figure shows the sequence of determination announcements through the 2023-24 irrigation season. Current water available to consumptive users is just under 5,500GL.

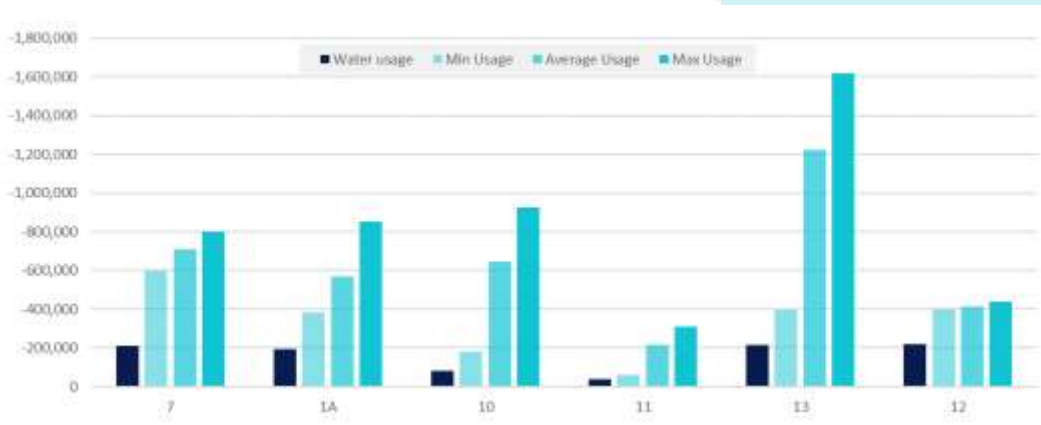
Figure 6 Seasonal determinations as of 15 November 2023



Usage

Figure 7 shows the minimum, average and maximum water use for each of the major trading zones since 2016-17. The zones with large areas of permanent horticulture are recognisable by their relatively stable water use (Vic Murray 7 and SA Murray 12), while water use in the other trading zones increases dramatically in when water availability is high and allocation prices are generally lower.

Figure 7 Water use for major trading zones



Despite hotter temperatures being forecast, soil moisture levels are close to average (see Climate) and therefore H2OX expects water use to be close to average for the 2023-24 season. A reduction in water use by (predominantly) viticulture is likely to offset any increased usage in annual crops due to warmer temperatures.

Current metered water use is shown by the dark columns in Figure 7. With summer crops in the ground and warmer weather on the horizon, water use will start to increase. We are also anticipating significant water use during autumn with irrigators looking to capitalise on high water availability and modest water prices.

Carryover availability

There is a fixed carryover capacity across the sMDB as shown in Figure 8. All but the Victorian Low Reliability space comes with a high risk of loss when the storages are full. Under average seasonal usage, we anticipate there is sufficient carryover space to carry the unused allocation into 2024-25.

Figure 8 Carryover capacity and forecast unused allocation assuming “average” use



Usage will be the key thing to watch this season. The rainfall events in October and November have dramatically reduced water usage. If these events continue, the volume of unused water will remain high and increase reliance on carry space at the end of the season, potentially pushing parking prices higher. More unused allocation means increased demand for parking space, especially when allocation prices are “reasonable”.

Demand for secure carry space is already anticipated to be high. The large carryover losses incurred during the past two seasons will see participants opt for more secure parking options (General or Low). Participants are seeking parking space to underwrite their own forwards (lease parking space and fill it with allocation themselves) more cost effectively.

Trade Constraints

Trade constraints can have a significant influence on water availability across the sMDB. While storages were full at the beginning of 2023-24, trade constraints saw prices push higher early in the season. As constraints have started to ease, allocation markets (especially between NSW and Victorian Murray trading zones) have steadied.

Barmah Choke

The Barmah Choke opened at the beginning of 2023-24 allowing ~60GL to trade downstream¹. Back-trade and other authority accounting saw modest additional trade opportunity.

Goulburn IVT

Over 150GL of allocation has traded into the Murray through the Goulburn IVT this season. The Goulburn IVT opened on 4 July allowing 61.9GL of allocation to be transferred into the Murray. The opening scheduled for 16 October (which saw 17GL transfer to the Murray) was postponed to 9 November when a further 73GL was transferred¹.

H2OX has been vocal about the inequitable IVT process and will continue to advocate for changes to the current system. The VWR is adamant that their ongoing redevelopment of the register will rectify the issues however, H2OX believe the “fastest-finger-first” process is inherently unfair and forces market participants to utilise intermediaries. There are no issues using intermediaries however, there are concerns about brokers pooling/aggregating allocation onto their own ABA's to move water and the equity and transparency in distributing the water successfully transferred.

Murrumbidgee IVT

The Murrumbidgee IVT closed on 31 August when the IVT was spilled. The IVT is unlikely to open again during 2023-24 due to the forecast price differential between the Murrumbidgee (high price) and NSW Murray (lower price). With determinations against General Security holding steady at 46%, it is likely prices will remain higher than the Murray.

NSW 71V

This rule prevents trade into NSW Murray from both Victoria and South Australia. It doesn't limit trade from the Murrumbidgee. The rule was in place until 30 September and resulted in allocation prices in NSW zone 11 (below Choke) trading substantially higher than Victorian and South Australia while trade into the Murrumbidgee was open. The rule was rescinded on 30 September allowing allocation to trade into NSW from Victorian and South Australia. This has seen prices return to parity in NSW.

¹ <https://pub.marq.com/20230701TradeOpenings/>

Victorian 50% spill rule

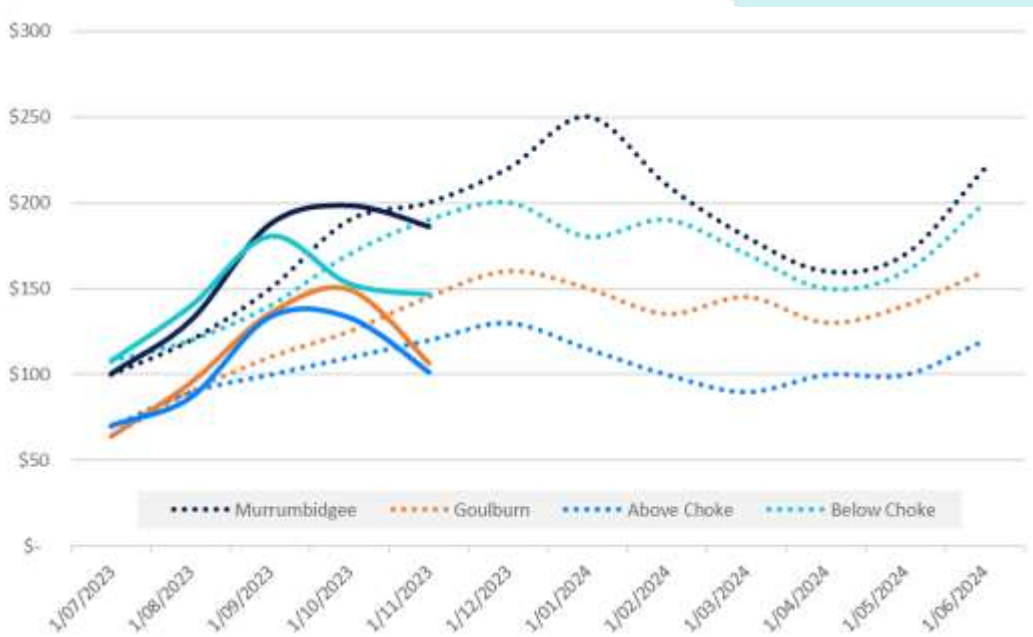
Victoria prevents trade in (from NSW) when the spill risk in Hume Dam exceeds 50%. The latest update from the NVRM on 10 November stated the spill risk is “close to 50%” so we may see this restriction removed in December. This constraint is having the most impact above Choke in Victoria where allocation prices remain higher than that traded in the NSW above Choke region.

Allocation Prices

Year to date

In July, H2OX published a 2023-2024 Seasonal Outlook which included a seasonal allocation price outlook for each of the 4 major trading zones represented by the dotted lines in Figure 9. The projection was based on storages being full and a projected El Niño season bringing warm, dry conditions across the irrigation regions.

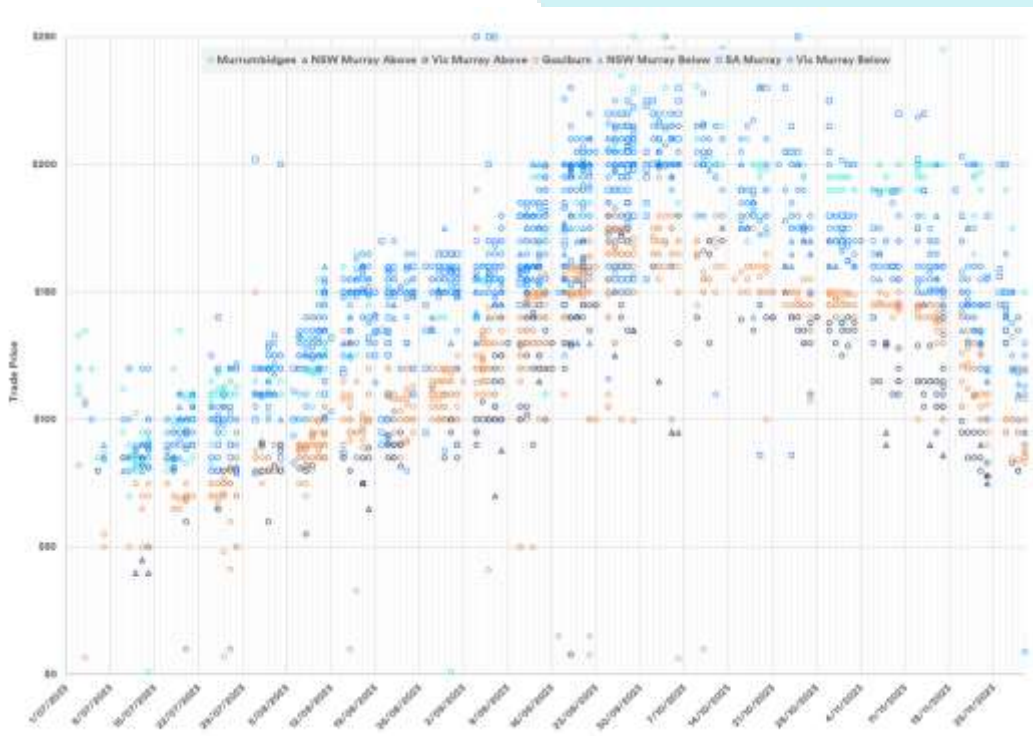
Figure 9 Allocation price forecast compared to actual VWAP



The volume weighted average price (VWAP) prices are shown by the solid lines in Figure 9. Some allocation trades in the Murrumbidgee and below Choke exceeded \$200/ML at the end of September the VWAP remained below \$200/ML. The wet start to October sucked demand from the market and prices dramatically declined. Trade volumes picked up in November following the opening of the Goulburn IVT and forecast rainfall events during November driving more sellers into the market (Figure 10).

By the end of November allocation prices in the Murrumbidgee were around \$150/ML, below Choke at \$100/ML and around \$90/ML in the Goulburn and above Choke regions – surprisingly similar prices seen at the opening of the season.

Figure 10 Standard commercial allocation trade (excluding IIO's)



Price Outlook

The climate outlooks from the BOM have shifted to neutral rainfall outlooks over the summer period– even chance of exceeding media rainfall. Median summer rainfall doesn't contribute much to crop moisture however, the significant rainfall events through November have bolstered soil moisture levels and will reduce water demand through December.

The trading activity in the market in the first part of the season has likely seen many irrigators secure their required allocation for their summer (and potentially) autumn programs. Significant spring rainfall resulted in a sharp downturn in demand and we expect buy demand from water users to be low in the coming months which will assist keeping allocation prices subdued. As a result, prices are unlikely to be as high as originally estimated (Figure 9). It is also less likely that we will see a significant increase in prices at the end of the season as originally predicted given storages are full and the outlook for neutral climate conditions.

Summary

Overall water availability is forecast to be similar to last season with good prospects of Victorian Low Reliability receiving full determinations in the coming months. Murrumbidgee General Security will likely see full determinations before seasons end.

Despite large carryover volumes, we had anticipated higher than average water use driven by El Niño conditions resulting in allocation prices being substantially higher than recent seasons. This projection has been curtailed by the rainfall events in October and November. We now anticipate average or below average water use which will see larger volumes of allocation wanting to be carried into the 2024-25 irrigation season. This will see increased demand for parking space in all trading zones.

Acronyms and Glossary

ACCC	Australian Competition and Consumer Commission
AWBA	Australian Water Brokers Association
BOM	The Bureau of Meteorology
CEWH	Commonwealth Environmental Water Holder
CICL	Coleambally Irrigation Co-operative Limited
DCCEEW	Department of Climate Change, Energy, Environment and Water (C'wlth)
DEECA	Department of Energy, Environment and Climate Action (Vic)
ENSO	El Nino Southern Oscillation
GMW	Goulburn Murray Water (Victoria)
IGWC	Inspector General Water Compliance
IIO	Irrigation Infrastructure Operator ie MI, MIL, CICL
IOD	Indian Ocean Dipole
MDB	Murray-Darling Basin
MDBA	Murray-Darling Basin Authority
sMDB	Southern Murray-Darling Basin
MIA	Murrumbidgee Irrigation
MIL	Murray Irrigation Limited
NVRM	Northern Victorian Resource Manager
SAM	Southern Annular Mode
SDLAM	Sustainable Diversion Limit Adjustment Mechanism
SOI	Southern Oscillation Index
SST	Sea surface temperature
VEWH	Victorian Environmental Water Holder
VWAP	Volume weighted average price
VWR	Victorian Water Register

Addendum

Data Sources

The data in this report is derived from external sources including;

- Victorian Water Register²
- New South Wales Water Register³
- NSW DPIE water dashboards⁴
- South Australian Water Register⁵
- Murray-Darling Basin Authority⁶
- Bureau of Meteorology⁷

About Xpansiv

Xpansiv provides the market infrastructure and data platform for water, carbon, renewable, and digital energy commodities. Xpansiv has been at the forefront of environmental market development for some of the world's fastest growing commodity markets with a global footprint of more than 250 employees with offices in Bendigo, Sydney, London, New York, San Francisco, Seattle, Houston and Milan.

Xpansiv is a non-listed public company, who's shareholders include, the Commonwealth Bank, The Clean Energy Finance Corporation, Macquarie, S&P Global, Blackstone and many others.

About H2OX

H2OX is a wholly owned subsidiary of Xpansiv. Launched in August 2015 to provide an ethical, independent, and transparent digital water trading platform. The H2OX water exchange is the only truly independent water trading marketplace operating in the MDB, providing a low cost, transparent and secure platform for participants to trade water rights in a live, competitive, digital exchange.

H2OX exchange allows registered participants to transact water securely, transparently, and anonymously. The exchange allows seamless trading for buyers and sellers. H2OX does not provide pricing advice, act for trading parties or trade water itself removing the inherent conflict of interest inherent with the broker model.

H2OX charges a fixed exchange fee of \$2.20/ML (minimum \$82.50 per transaction) for allocation, carryover/parking, forwards and lease transactions regardless of the price of the water. For entitlement transactions, an exchange fee of 0.825% is charged (minimum \$825 per transaction).

Register to trade with H2OX by downloading and completing our registration form⁸.

² <https://www.waterregister.vic.gov.au/>

³ <https://waterregister.watnsw.com.au/water-register-frame>

⁴ <https://www.industry.nsw.gov.au/water/allocations-availability/allocations/dashboard>

⁵ <https://www.waterconnect.sa.gov.au/Systems/WLPR/Pages/Default.aspx>

⁶ <https://www.mdba.gov.au/>

⁷ <http://www.bom.gov.au/>

⁸ <https://pub.marq.com/h2ox-registration/>

H2OSignals

H2OX has been providing timely water-market information for over five years through weekly newsletters and frequent market reports. Building on this foundation, H2OSignals provides detailed market information, trend analysis and accurate pricing data from our exchange to help asset managers of all sizes make informed decisions about their water portfolios.

There is a tremendous volume of water-market data available and we understand just how much time it takes to aggregate, cleanse and consolidate it. We know your time is better spent developing and implementing strategies to improve the return on your investments.

Building on the services and information we currently provide, H2OSignals delivers a range of products to help asset managers make informed decisions about the water markets of the southern Murray-Darling Basin. H2OSignals provides contextual information about key market drivers, market participants and future opportunities.

H2OSignals is relevant for anyone exposed to the Australian water market, including government agencies, agricultural and water asset managers, financial institutions, and industry representative bodies.

H2OX believes that an informed market is beneficial for all participants. As a result, our weekly newsletter⁹ and quarterly Water Availability Reports will remain free for all users.

To find out more about the H2OSignals products email xsignals@h2ox.com

⁹ <http://eepurl.com/gE3hQr>

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